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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)

16463-95 (was 58029-13C)

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on September 1, 2006

Signature

Typed or printed name Terrence N. Kuharchuk

Application Number

10/769,761

Filed

February 3, 2004

First Named Inventor

Edward James Cargill

Art Unit

3673

Examiner

Alison K. Pickard

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

5 pages of "Remarks" are attached.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)

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Registration number 34,999

- ☐ attorney or agent acting under 37 CFR 1.34.

Registration number if acting under 37 CFR 1.34

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Telephone number

September 1, 2006

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required.
Submit multiple forms if more than one signature is required, see below*.

☐ *Total of _____ forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.8. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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REMARKS to accompany PRE-APPEAL BRIEF REQUEST FOR REVIEW**Re: Final Office Action dated April 4, 2006**

The Applicant's invention is described in detail in: (1) the Response filed July 8, 2006 in reply to the Office Action dated March 8, 2005 (Page 6, paragraph 2 - Page 8, paragraph 3); and (2) the Response filed January 11, 2006 in reply to the Office Action dated September 16, 2006 (Page 9, paragraph 5 - Page 10, paragraph 2).

The Applicant's invention is directed at a hydrostatic seal assembly provided for sealing with a rotatable component and comprising a seal element retained by a seal housing. The seal assembly defines a first side and a second side so that the first side is sealed from the second side by the seal assembly. In addition, the rotatable component defines a longitudinal axis of rotation and extends through the seal assembly between the first side and the second side.

One of a planar seal engagement surface and a planar housing engagement surface is comprised of a compressible material. The other of the planar seal engagement surface and the planar housing engagement surface is oriented in a plane normal to the longitudinal axis of rotation of the component and defines a depression therein for providing an isolated gap between the planar seal engagement surface and the planar housing engagement surface when the planar seal engagement surface and the planar housing engagement surface are engaged, for receiving the compressible material. Finally, the seal element is exposed to a fluid pressure on the second side of the seal assembly such that an engagement force is exerted between the planar seal engagement surface and the planar housing engagement surface in order to press the compressible material into the depression and thereby restrain movement of the seal element relative to the seal housing.

Examiner's Rejections -

(a) Claims 1, 7-10 and 16-18 have been rejected under 35 U.S.C. 102(b) for being anticipated by U.S. Patent No. 4,729,569 to Muller.

Muller teaches a **hydrodynamic** seal. Unlike hydrostatic seals that create a balanced opening and closing force between the seal faces to maintain a predetermined amount of seal face separation, hydrodynamic seals depend upon the generation of a hydrodynamic lifting force to separate the seal faces. Muller is particularly directed at addressing problems associated with the sealing rings of hydrodynamic seals (Column 1, line 16 - Column 2, line 16; Column 2, lines 45 -

Column 3, line 5; Column 4, lines 16 - 46; Column 5, lines 26 - 49 of Muller). In particular, Muller provides a backup ring 3 between an elastomer seal ring 4 and a housing (outer part 8). Referring to Figures 1a and 2a, the seal ring 4 and the backup ring 3 are "fitted in a radial groove in the cylindrical outer part 8" (Column 7, lines 12 - 17 of Muller). The backup ring 3, and not the housing or outer part 8, includes projections 32 which engage the seal ring 4 to deform the seal ring 4 axially. The backup ring 3 also includes projections 34 which engage pins or projections 6 in the housing 8 to prevent the backup ring 3 from twisting relative to the housing. (Column 7, lines 18 - 37 and 42 - 64 of Muller).

In order to anticipate a claim, the reference must teach each and every element of the claim (MPEP §2131). Muller fails to teach each and every element of at least independent Claim 1. The Applicant claims one of the planar seal engagement surface and the planar housing engagement surface being oriented in a plane normal to the longitudinal axis of rotation of the component and defining a depression therein for providing an isolated gap between the planar seal engagement surface and the planar housing engagement surface when the planar seal engagement surface and the planar housing engagement surface are engaged."

With respect to Muller, the Examiner has incorrectly equated the backup ring 3 with the "housing" and has incorrectly equated the faces 31 between the projections 32 in the backup ring 3 with the "isolated gap" referred to in Claim 1. In fact, the backup ring 3 is between the seal ring 4 and the housing 8. As clearly shown in Figures 1b, 2b, 2c, 3, etc., the backup ring 3 is a separate or distinct component which is retained within the housing 8 and does not comprise a part of the housing 8. Thus, neither the seal ring 4 nor the housing 8 provides a "depression." Further, the seal ring 4 and the housing 8 do not engage each other in a plane normal to the longitudinal axis of rotation of the component. Rather, the seal ring 4 and the housing 8 only engage each other in a plane parallel to the longitudinal axis (i.e. the surface of the seal ring 4 opposite to the sliding seal face 45).

In any event, the backup ring 3 of Muller does not provide an "isolated gap" as defined by the Applicant at Page 10, line 28 to Page 11, line 2 of the Application: "The gap 48 is isolated in that the seal engagement surface effectively seals the gap 48 on all sides to trap low (atmospheric) pressure air in the gap while the seal assembly 20 is being assembled and to inhibit fluid from

passing into the gap 48 while the seal is in service.” The projections 32 and faces 31 therebetween on the backup ring 3 do not provide “an isolated gap” as claimed.

Finally, Muller does not disclose a “spring” as claimed in Claims 8 and 17. The Examiner refers to Figures 4a and 7b of Muller as disclosing the “spring.” However, Figures 4a and 7b show the use of a “clamp ring 2” being an elastomer ring (Column 8, lines 42 - 43 and 58 - 59). The function of the elastomer clamp ring 2 is not discussed, but it may be assumed that it is providing a sealing function.

(b) Claims 1-17 have been rejected under U.S.C. 103(a) as being unpatentable over “admitted prior art” in view of U.S. Patent No. 2,462,596 to Bent and U.S. Patent No. 4,703,937 to Chrzanowski.

The Applicant denies that it discloses (on Pages 1 - 2 of the Application) a “known sealing assembly having ... a spring used for a preloading mechanism.” Rather, the Application simply states that “it may be possible to counteract these effects by using springs or other biasing devices.” There is no admission that such springs have in fact been used. Rather, the Application teaches away from the use of springs on their own given difficulties which would be inherent in their use.

Bent is discussed in detail in the Response filed July 8, 2006 in reply to the Office Action dated March 8, 2005 (Page 14, paragraph 4 - Page 19, paragraph 1; Page 21, paragraph 2 - Page 23, paragraph 2; Page 23, paragraph 7 - Page 24, paragraph 2). In summary, Bent discloses an annular recess 7 in a groove 4 which retains a packing 3 in a reciprocating assembly such as a piston and a cylinder. The purpose of the annular recess 7 is to reduce the friction between the piston and the cylinder by providing for limited displacement of the packing 3 into the annular recess 7. The surface 5 of the groove 4 defining the recess 7 is oriented in a plane parallel with the longitudinal axis of the reciprocating component of the assembly. The Claims were previously amended to distinguish the Invention from Bent, by providing that the seal assembly is associated with parts that are rotatable relative to each other and by providing that the isolated gap is oriented in a plane normal to the longitudinal axis of rotation of the rotatable component.

Bent is directed at the prevention of overloading of the seal member and rolling of the seal member where the component extending within the seal assembly is a reciprocating component. To achieve these purposes, the recess of Bent is located in a specific position such that “any fluid pressure which is communicated to the periphery of the piston will act on the packing ring only in a

direction to cause the material of the ring to flow into the recess..." (Column 2, lines 51 - 55 of Bent). Thus, in order to permit the radial displacement of the seal member outwardly, it is necessary that the recess be located in a surface oriented in a plane parallel to the reciprocating shaft.

Chrzanowski teaches a self-venting seal assembly. It is respectfully submitted that the Examiner has misapplied Chrzanowski on the basis that the vent hole 40 is not analogous to, and cannot be equated with, the "isolated gap" claimed in Claim 1 as discussed above. The essence of Chrzanowski is the provision of a vent hole 40 which is defined by and extends through an outer portion of a retaining disc 27 or a sleeve member 25 for retaining a sealing ring 24. The vent hole 40 permits fluid to escape out of the sealing assembly 10 from a space 36 adjacent a low pressure end of an outer peripheral surface of the sealing ring 24. As a result, any fluid in the space 36 is not trapped and pressurized in the space 36 and does not force the inner peripheral surface of the sealing ring 24 inward against the inner rotatable shaft. Thus, it is essential that the vent hole 40 remain open during use of the seal assembly for at least part of the time. The venting reduces the radial load on the sealing ring 24, resulting in less friction and heat and an increased service life for the sealing ring. (Column 1, lines 42 - 47; Column 2, line 46 - Column 3, line 3; Column 3, lines 9 - 13 of Chrzanowski).

Further, in Chrzanowski, the fluid pressure is applied "to the left or high pressure end of the O-ring 24" which causes it to be axially compressed against the retainer disc 27 (Column 2, lines 50 - 60 of Chrzanowski). Thus, the vent 40 must be located such that it communicates with the opposed right or low pressure end of the O-ring 24 in order to permit the desired venting to occur.

In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to combine the references (MPEP §2143, §2143.01). Neither Bent nor Chrzanowski provides any such suggestion or motivation. First, there is no suggestion or motivation in Bent that a vent hole or venting of the recess 7 is required for any reason. Second, if Bent were to provide a vent hole, the vent hole would be provided in the same location as the present recess 7, i.e. oriented in a parallel plane. For Bent to perform its express function, the recess must be located in a position opposing the direction in which the fluid pressure is being applied to the seal member. For Chrzanowski to perform its express function, the vent hole 40 must similarly be located in a position opposing the high pressure end of the seal member. In Bent, the high

pressure end of the seal member is adjacent the periphery of the piston, while the opposed low pressure end of the seal engages the surface 5 of the groove 4 defining the recess 7.

Further, in order to establish a *prima facie* case of obviousness, the prior art references must teach or suggest all the claim limitations. (MPEP §2143, §2143.03). Neither Bent nor Chrzanowski teaches or suggests the subject matter of Claims 4 - 6 and 13 - 15, being a depression comprised of a plurality of circumferential grooves. Chrzanowski does not disclose any circumferential grooves (only a vent hole), while Bent discloses a single groove only.

The Examiner has cited U.S. Patent No. 4,210,405 to Jesswein as evidencing "plural relief depressions." Jesswein relates to venting of seal assemblies and contemplates three equally spaced relief openings (54,55,56), each vent being comprised of a "circular axial opening" as shown in Figure 5 (Column 3, lines 31 - 36, 44 - 47 of Jesswein). Thus, Jesswein does not disclose a depression comprised of either a single circumferential groove or a plurality of grooves.

(c) Claims 19 and 20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Muller in view of U.S. Patent No. 4,610,319 to Kalsi.

Kalsi teaches a hydrodynamic seal for sealing a rotary cone rock bit, and appears to be cited for the purpose of establishing that it is known to use a seal in a drilling apparatus. However, the seal in Kalsi is in no way similar to either the Applicant's claimed seal assembly or that of Muller. Furthermore, there is no suggestion in Kalsi of providing a pressure balanced drilling apparatus, as claimed in Claim 20. Thus, it is respectfully submitted that Claims 19 - 20 are not obvious. First, all of the claim limitations are not taught by the references, as discussed above. Second, there is no motivation or suggestion to combine the references given the dissimilar seal assemblies described therein.

(d) Prior Art not Cited - U.S. Patent No. 6,036,192 and U.S. Patent No. 6,334,619 to Dietle et al are noted. In reply, the Applicant notes that Muller, Kalsi and Dietle all relate to hydrodynamic seals, which are a form of "non-contact seal" which provides lubrication between the seal and the moving part with which the seal is associated. Further, U.S. 3,830,508 to Endicott is again raised. Endicott is distinguished in detail in the Response filed July 8, 2006 in reply to the Office Action of March 8, 2005 (Page 12, paragraph 6 - Page 14, paragraph 3; Page 17, paragraph 1 - Page 19, paragraph 1; Page 21, paragraph 2 - Page 23, paragraph 2) and the Response filed January 11, 2006 in reply to the Office Action of September 16, 2006 (Page 11, paragraph 5 - Page 12, paragraph 4).

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